REMARKS

Review and reconsideration on the merits are requested.

In response to the rejection under 35 U.S.C. § 112, second paragraph, claim 2 has been amended to delete "that is superior in conductivity and corrosion resistance." Withdrawal is respectfully requested.

The independent claims are claims 1 and 2 directed to a separator (product) and method claims 5, 6, 7 and 8 directed to a method of making a separator.

Claims 1-4 were rejected under 35 U.S.C. § 102(b) as being anticipated by EP 1 107 340 to Fronk et al. EP '340 was cited as teaching a separator for a fuel cell substantially as claimed, including a metal substrate 60 having formed thereon conductive polymer coating 94, either directly or via passive layer 96.

Applicants traverse, and respectfully request the Examiner to reconsider in view of the amendment to the claims and the following remarks.

Separator 60 of EP '340 includes ridges 80 defining therebetween a plurality of channels 82 covered with an electrically conductive, oxidation resistant and acid-resistant protective coating 94. Although seemingly similar to the separator 10 as shown, for example, in Fig. 1 of the present specification, the difference lies in the way in which the separator is made resulting in a materially different product.

Claim 1 has been amended to recite that the substrate comprises groove-like gas flow passages prepared by bending the substrate, and that the separator further comprises a conductive polymer film formed on a surface of the bent substrate by electrolytic polymerization.

The separator manufactured in this manner is different, in an unobvious way, from a similar separator where the metal substrate is bent to form groove-like gas flow passages after forming the conductive polymer film. One structural difference is that the conductive polymer film is not thereby damaged. See page 9, line 23 - page 10, line 9. Another difference lies in employing electrolytic polymerization as opposed to, for example, chemical polymerization, as taught by EP '340 (see paragraph [0016]). Although the conductive polymer film in EP '340 may or may not be formed on metal sheet 60 already having a plurality of ridges 80 and channels 82 provided therein, EP '340 does not teach the advantage of electrolytic polymerization for forming a uniform and impervious polymer layer on such bent surfaces (as opposed to chemical polymerization). Namely, the difference in structure lies in the quality of the polymer layer thus formed.

With respect to claim 2, EP '340 discloses an embodiment where the electrically conductive polymer coating is applied to an Al substrate which had previously been coated with a layer of oxidizable/passivating metal such as stainless steel. See paragraph [0022].

To distinguish over this embodiment of EP '340, claim 2 has been amended to limit the passive-state layer to one that is formed by immersing the substrate in a solution of nitric acid, chromic acid, etc.; by electrolysis in an acid liquid; or by anodic polarization (page 9, lines 5-11 of the specification). The passive-state layer of the invention thus formed is necessarily different in terms of both composition and structure from the layer of oxidizable/passivating metal such as stainless steel disclosed by EP '340.

For the above reasons, it is respectfully submitted that claims 1-4, including amended claims 1 and 2 define novel subject matter and are not anticipated by EP '340. Withdrawal of the foregoing rejection under 35 U.S.C. § 102(b) is respectfully requested.

Claims 5, 6, 9 and 10 were rejected under 35 U.S.C. § 103(a) as being unpatentable over EP '340 in view of EP 1 100 097 to Mitsui et al. EP '097 was cited as teaching a conductive polymer layer formed on a substrate by electrolytic polymerization using the substrate as an electrolytic polymerization electrode. The reason for rejection was that it would have been obvious to modify the method of EP '340 to form the conductive polymer layer by electrolytic polymerization as taught by EP '097 so as to obtain a thick and durable polymer coating.

In response, claim 5 has been amended to recite that the conductive polymer film is formed on a surface of a bent substrate by electrolytic polymerization, so as to distinguish over the prior art as discussed above. Claim 6 has been be amended in a manner similar to claim 2, to further characterize the passive-state layer. Claims 7 and 8 has been amended to require forming the conductive polymer film on a surface of the substrate only after first forming the groove-like gas flow passages.

It is respectfully submitted that the method claims so amended define patentable subject matter, and withdrawal of the foregoing rejection under 35 U.S.C. § 103(a) is respectfully requested.

Claims 7, 8, 11 and 12 were rejected under 35 U.S.C. § 103(a) as being unpatentable over EP '340 in view of EP '097 and in further view of U.S. 2002/0102453 A1 to Suenaga et al. Suenaga et al was cited as teaching forming groove-like gas low passages by bending a metal

substrate, citing Fig. 2 (and perhaps paragraph [0028]). The reason for rejection was that it would have been obvious to modify the method of EP '340 to include a step of forming groove-like gas flow passages by bending the metal substrate as taught by Suenaga et al so as to utilize an easier and simpler method of forming such gas flow passages.

Applicants respond as follows.

Suenaga et al (Fig. 2) surely illustrates metal separator 3 which has been bent (at some time or the other) to form groove-like gas flow passages.

On the other hand, a characteristic feature of the invention is that the groove-like gas flow passages are formed by bending prior to electrolytic polymerization and formation of passive-state layers as described bridging pages 9-10 of the specification. In this manner, the conductive polymer films and passive-state layers are not damaged in forming gas flow passages so as to reliably obtain their intended function. Particularly, by employing electrolytic polymerization using the basic member as an electrode makes it possible to form conductive polymer films and passive-state layers uniformly to attain stable characteristics even if the surfaces of the substrate are indented as a result of forming the gas-flow passages (page 10, lines 3-9 of the specification).

On the other hand, Suenaga does not disclose a conductive polymer film formed on the surface of the substrate, let alone forming the conductive polymer film after bending the substrate to form groove-like gas flow passages.

To clearly distinguish over the cited prior art, the claims have been amended to recite first forming the groove-like gas flow passages, and then forming a conductive polymer film on the

surface of the substrate (see the amendment to claim 7). Claim 8 has also been amended to recite forming the passive-state layer on a surface of the bent substrate.

In view of the above, it is respectfully submitted that claims 7, 8, 11 and 12 including amended claims 7 and 8 are patentable over EP '340 in view of EP '097 further in view of Suenaga, and withdrawal of the foregoing rejection under 35 U.S.C. § 103(a) is respectfully requested.

Claims 10, 11 and 12 have been amended to correct awkward language and to place the claims in better form.

Withdrawal of all rejections and allowance of claims 1-12 is earnestly solicited.

In the event that the Examiner believes that it may be helpful to advance the prosecution of this application, the Examiner is invited to contact the undersigned at the local Washington, D.C. telephone number indicated below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,

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